# COMMON WATER

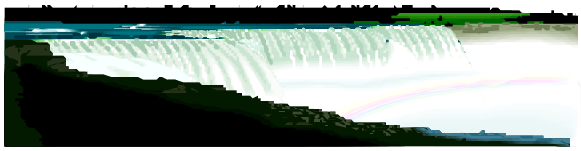
**Objectives:**

Students will:

- illustrate how multiple users of water resources can affect water quality and quantity
- examine the complexities of providing water for all water users.

**Materials:**

- The Yellow Pages of a phone book
- One container for each student (bowls or milk cartons with the tops cut off)
- 17 large household sponges: 3 cut into fourths, 5 into thirds, 5 into halves, and 4 whole. (Increase or decrease the number of sponges to fit number of students)
- Various colors of food coloring: put several drops of coloring on all sponges and sponge pieces.
- 5 gallon bucket
- Stopwatch
- Nametags



**Procedure:**

1. Have students list major water user groups in their community and how they use water. The Yellow Pages can be a source of ideas. You can use the cards from the activity, *Water Works*, for more ideas. Ask students to make a list arranging the water users from those who they think use the most water to those who use the least. This can be done in groups by giving each group different pages from the Yellow Pages to work with.
2. Fill the 5-gallon bucket to the brim with water. Since the water may spill, be sure to conduct the activity outside or in an area that can get wet. You may wish to mark the bucket with a line for every gallon. Tell the students that the bucket represents water stored in an aquifer. Define aquifer, and discuss where the students get their drinking water. The sponges will represent wells pulling water out of the aquifer.
3. Tell the students that they are going to simulate changes in the aquifer over several time periods. Each 30-second round represents a time period (see Round Scenarios, next page). In each round, students represent different water users; they should make name tags to identify their roles.
4. For each round, students should position themselves an equal distance from the water source. When the round starts, students fill their sponges with water from the aquifer (bucket). To represent water consumption, have them squeeze water out of the sponges into individual containers. Students can refill their sponges as often as they like during the round.
5. At the end of each round, record how much water remains in the bucket. Tell students to empty half of the water from their containers back into the bucket. This represents used water that makes it back to the aquifer (i.e. when it percolates through the soil, when it is discharged from a factory, after it runs off the surface of a parking lot). Students will notice that the water is colored. Inform them that this represents sewage and runoff from urban and rural areas.

6. Fill the bucket to the brim again by adding clean water before each round.

**Round Scenarios:**

1. It is 100 years ago. A large farm and a small town are located above the aquifer. Distribute sponges cut in fourths to 6 students (town dwellers) and a half sponge to a student representing the farm.
2. It is now just after World War II. The size of the town has increased. Many of the town residents are employed in an industry that makes typewriters. The factory is represented by half of a sponge. Two farming areas supply milk and some food (meat, grains, vegetables) for the town; they get one sponge each. Give one sponge to a student who represents a power company. Several community services, such as hospitals, schools, and stores, are now part of the town; each student representing such a service agency gets half a sponge. Provide each family (about 10 students) with a third of a sponge.
3. It is the present. The town has continued to grow. A new industry that makes household cleaning products has moved in (another sponge). Represent residential expansion by giving sponge pieces to any remaining students.

**Wrap Up:**

Have students discuss the quantity and quality of water at the end of each round. Discuss the proportions of sponge pieces distributed to different community members. Are water users in their own community represented by the characters in the simulation? Do students think the sponge sizes were appropriate? Were there any groups that used too much water? How could the activity be adjusted to ensure enough clean water for all users? Students may suggest making fewer trips to soak their sponges or reducing the size of their sponges. Discuss methods of reducing waste discharge (e.g., using organic fertilizers, reducing litter, upgrading sewage treatment plants). Encourage the students to find a use for the water that was used in this activity.